

What is claimed is:

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1. A method of fabricating a mask for patterning a semiconductor wafer, comprising:
providing a mask blank including a substrate and an
5 opaque material formed thereon; and
patterning the opaque material with oval or rounded features using an elliptical-shaped energy beam.
2. The method according to Claim 1, wherein the
10 elliptical-shaped energy beam includes a long axis and a short axis, wherein an edge along the energy beam long axis is used to pattern oval features on the wafer.
3. The method according to Claim 1, further comprising
15 using the mask to fabricate a semiconductor device.
4. A method of fabricating a mask for patterning a semiconductor device, comprising:
providing a substrate including an opaque material
20 formed thereon;
forming a pattern on the opaque material, portions of the pattern having stair-step shaped edges; and
reducing the stair-step shaped edges formed on the
opaque material with an elliptical-shaped energy beam.
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5. The method according to Claim 4, wherein forming a pattern comprises forming a pattern having at least one edge having two sides being positioned at substantially
right angles to one another to form a substantially
30 right-angle corner, wherein reducing the stair-step shaped edges comprises smoothing the right-angle corners.
6. The method according to Claim 5, wherein forming a pattern comprises using a circular-shaped energy beam to
35 form the pattern.

7. The method according to Claim 4, wherein the
elliptical-shaped energy beam includes a long axis and a
short axis, wherein an edge along the energy beam long
5 axis is used to remove the stair-step shaped edges.

8. The method according to Claim 4, wherein forming a
pattern comprises forming oval or rounded features.

10 9. The method according to Claim 4, wherein reducing the
stair-step shaped edges comprises using a laser or
electron energy beam.

10. The method according to Claim 4, further comprising
15 using the mask to pattern a semiconductor wafer.

11. The method according to Claim 10, wherein the
semiconductor wafer patterned comprises a magnetic random
access memory (MRAM) or dynamic random access memory
20 (DRAM) device.

12. A method of fabricating a mask for patterning a
semiconductor device, comprising:
providing a substrate including a transparent
25 material;
depositing an opaque material over the substrate;
using a substantially circular-shaped energy beam to
form a pattern including oval or rounded features on the
opaque material, portions of the oval or rounded features
30 including undesired stair-step shaped edges; and
at least partially removing the oval or rounded
feature stair-step shaped edges with an elliptical-shaped
energy beam.

13. The method according to Claim 12, wherein the oval or rounded features stair-step shaped edges include at least one edge having two sides being positioned at substantially right angles to one another to form a substantially right-angle corner, wherein removing the stair-step shaped edges comprises removing the right-angle corners.
14. The method according to Claim 13, wherein the elliptical-shaped energy beam includes a long axis and a short axis, wherein an edge along the energy beam long axis is used to remove the stair-step shaped edges.
15. The method according to Claim 14, wherein removing the oval or rounded feature stair-step shaped edges comprises using a laser or electron energy beam.
16. The method according to Claim 12, further comprising using the mask to fabricate a semiconductor device.
17. The method according to Claim 16, wherein the semiconductor device fabricated comprises a magnetic random access memory (MRAM) or dynamic random access memory (DRAM) device.
18. A method of fabricating a semiconductor device, comprising:
- providing a semiconductor wafer;
 - patterning the semiconductor wafer with a mask, the mask including oval or rounded features formed using an elliptical-shaped energy beam.

19. The method according to Claim 18, wherein the mask is fabricated by a method including:

providing a substrate including a transparent material;

5 depositing an opaque material formed thereon;

using a substantially circular-shaped energy beam to form a pattern including the oval or rounded features on the opaque material, portions of the oval or rounded features including undesired stair-step shaped edges; and

10 at least partially removing the oval or rounded feature stair-step shaped edges with an elliptical-shaped energy beam.

20. The method according to Claim 19, wherein the
15 elliptical-shaped energy beam includes a long axis and a short axis, wherein an edge along the energy beam long axis is used to remove the stair-step shaped edges of the mask.

20 21. The method according to Claim 19, wherein removing the stair-step shaped edges of the mask comprises using a laser or electron energy beam.

22. The method according to Claim 18, further
25 comprising:

depositing a resist layer on the semiconductor wafer, wherein the mask is used to pattern the resist layer.

30 23. The method according to Claim 18, wherein the semiconductor device fabricated comprises a magnetic random access memory (MRAM) or dynamic random access memory (DRAM) device.

24. A method of patterning a semiconductor wafer,
comprising:

providing a semiconductor wafer having a surface;
depositing a resist over the semiconductor wafer

5 surface;

patterning the resist with an energy beam, wherein
the energy beam comprises a beam having an elliptical-
shaped cross-section; and

using the resist to pattern the wafer surface.

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25. The method according to Claim 24, wherein the energy
beam comprises a laser, ion beam, or electron energy
beam.

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26. The method according to Claim 24, wherein patterning
the resist comprises forming oval or rounded features.

27. The method according to Claim 26, further
comprising:

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using a substantially circular-shaped energy beam to
form a pattern including the oval or rounded features on
the resist, portions of the oval or rounded features
including undesired stair-step shaped edges; and

25 at least partially removing the oval or rounded
feature stair-step shaped edges with the elliptical-
shaped energy beam.

28. A semiconductor device patterned using the method of
Claim 24.

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